



## United States Department of the Interior

U. S. GEOLOGICAL SURVEY  
Earthquake Science Center  
345 Middlefield Road, MS 977  
Menlo Park, CA 94025  
brocher@usgs.gov  
650-329-4737 (voice) 650-329-5617 (fax)

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Chairman Phil Isenberg  
Delta Stewardship Council  
650 Capitol Mall  
Sacramento, CA 95814

### Dear Chairman Isenberg:

I am writing to thank you for the opportunity for the USGS to discuss seismic hazards to the Sacramento/San Joaquin Delta with the Delta Stewardship Council. I hope we will have future opportunities to further discuss the hazards and the research we are doing to better understand the hazards.

I want to take this opportunity to clarify some remarks that we made about the DRMS studies and our understanding of the seismic hazard. During our presentation we made comments that have been construed as indicating that the DRMS study underestimated the hazards (and risk) to the Delta from earthquakes. This was not our intent: we concur with the DRMS study that the seismic hazard in the Delta is high.

Beside informing the Council about earthquake hazards to the Delta, the main point we were trying to make is that there remains considerable uncertainty in any characterization of hazards due to our community's limited understanding of: (1) the potential seismic sources in the East Bay and beneath the Delta; (2) the effects that peat and soft soils will have on earthquake energy as it is transmitted to the ground surface; and (3) the deeper three-dimensional geology of this part of the Central Valley and the presence of thick, soft basin materials. We believe that it is critical to obtain more measurements of ground motions in the Delta to address these last two concerns. We further believe that the ongoing research at the USGS and elsewhere will help to reduce the uncertainty in hazard assessments.

Again, thank you for the opportunity to discuss seismic hazards with your group. We look forward to future collaborations with you and the Delta Stewardship Council.

Tom Brocher  
Director, Earthquake Science Center

cc. Said Salah-Mars, URS Corporation  
Marty McCann, Jack R. Benjamin & Assoc., Inc.